DRAFT

EXCESS CANCER RISK AND HAZARD CALCULATIONS FOR AEROVOX

Excess Cancer Risk = oral risk + dermal Risk

$= [C_{wipe} \times 1mg/1000ug \times FTSS \times SA \times FTSM \times CF \times ABS_o \times F \times D \times CPF_o / BW \times AT \times 1yr/365days] + [C_{wipe} \times 1mg/1000ug \times FTSS \times SA \times (1-FTSM) \times CF \times ABSd \times F \times D \times CPF_o / BW \times AT]$

Where;

C_{wipe} = concentration of PCBs in wipe sample (ug/100cm2)(95UCL)
FTSS = fraction transferred from surface to skin (unitless)
SA = exposed surface area (cm^2)
FTSM = fraction tranferred from skin to mouth (unitless)
CF = contact frequency (events/day)
ABS_o=oral absorption fraction (unitless)
ABSd = dermal absorption fraction (unitless)
F = exposure frequency (days/yr)
D = exposure duration (yrs)
CPF_o=oral cancer potency factor (mg/kg-dy)-1
BW = adult body weight (kg)
AT = averaging time (days)[carcinogens (365dys/yr x 70yrs), noncarcinogens(365dys/yr x D)]

TABLE 4 1

VALUES USED FOR DAILY INTAKE CALCULATIONS

Aerovox Facility, New Bedford Harbor, MA

Exposure Scenario for the Carpenter

average + central tendency

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Chronic Daily Intake Fact Mg/Kg-dy
Ingestion	Cd	concentration of PCBs in dust (f)	ug/100cm2	205	see table 1	205	See Table 1	Cancer
+	FTSS	fraction transferred from surface to skin	fraction - unitless	0.01	a	0.0010	a	RME 1.6E-04
Dermal	SA	adult surface area	cm2	4000 00	b	3000.00	professional judgement	
	FTSM	fraction transferred from skin to mouth	fraction - unitless	0 0075	a	0 01	a	CT 6.2E-06
	CF	contact frequency	events/dy	8.00	prof judge	8	prof judge	
	ABSo	oral absorption fraction	fraction - unitless	1 00	c	1 00	b	
	F	exposure frequency	dys/yr	250 00	site-specific	250 00	site-specific	Noncancer
	D	exposure duration	yrs	25 00	c	25.00	c	
	CPFo	Oral Cancer Potency Factor	(mg/kg-dy)-1	2 00	d	1.00	d	RME 3.6E-04
	BW	adult body weight	kg	70.00	c	70 00	c	
	AT	averaging time (carcinogen)	days	25550.00	c	25550 00	c	CT 1.5E-05
		(noncarcinogen)		10950.00	c	10950.00	c	
	cf	conversion factor	mg/ug	0.001		0 001		
	RfDo	oral reference dose	mg/kg-dy	2 00E-05	IRIS, 97	2.00E-05	IRIS, 1997	
	ABSd	dermal absorption from dust	fraction - unitless	0.14	e	0.14	e	

a - USEPA (1996). Oral and Dermal Risk Assessment Final, Cressona, Aluminum Plant, Cressona, PA. From Debra Forman, PhD toxicologist Industrial Domain Section Region 3 Philadelphia, PA

b - PTI Environmental Services (1993) Gastrointestinal Absorption of Selected Chemicals. Review of Evidence for Deriving Relative Absorption Factors EPA Contract # 68-WO-0032.

c - USEPA (1993) Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure. Draft November

d - USEPA (1996) PCBs Cancer Dose-Response Assessment and Application to Environmental Mixtures. National Center for Environmental Assessment Office of Research and Development, Washington DC EPA/600/P-96-001F

e - Wester, R., Maibach, H Sedik, L., and J Melendres (1993) Percutaneous Absorption of PCBs from Soil In Vivo Rhesus Monkey, in Vitro Human Skin, and binding to Powdered Human Stratum Corneum Journal of Toxicology and Env Health, 39 375-382

* represents 90%x UCL of Hi exposure areas + 10% x UCL of low exp areas

Intake Factor (mg/kg-dy) = [cf x FTSS x SA x FTSM x CF x ABSd x F x D/BW x AT] + [cf x FTSS x SA x (1-FTSM) x CF x ABSd x Fx D/BW xAT]

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CALCULATION OF 95%UCL
Carpenter

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Most Frequented areas: includes all surfaces from ceilings, floors, beams, in 1st floor pump room shipping dock, impregnation rackroom, final test area, receiving dock, tank room #2 and 2nd floor pump room

Conc (ug/100cm2)	LN of Conc	MEAN	sd	SD2	N	h STAT	UCL
26	3.258097	4.715039	0.919334	0.845175	67	2.196	217.2
28	3.332205						
29	3.367296						
33	3.496508						
34	3.526361						
39	3.663562						
45	3.806662						
45	3.806662						
46	3.828641						
47	3.850148						
48	3.871201						
48	3.871201						
49	3.89182						
51	3.931826						
52	3.951244						
54	3.988984						
54	3.988984						
55	4.007333						
55	4.007333						
59	4.077537						
63	4.143135						
63	4.143135						
64	4.158883						
67	4.204693						
71	4.26268						
72	4.276666						
74	4.304065						
76	4.330733						
84	4.430817						
88	4.477337						
88	4.477337						
95	4.553877						
107	4.672829						
108	4.682131						
109	4.691348						
112	4.718499						
112	4.718499						
115	4.744932						
115	4.744932						
117	4.762174						
126	4.836282						
126	4.836282						
131	4.875197						
131	4.875197						
132	4.882802						
144	4.969813						
159	5.068904						
168	5.123964						
176	5.170484						
180	5.192957						
190	5.247024						
193	5.26269						
202	5.308268						
202	5.308268						
203	5.313206						
241	5.484797						
247	5.509388						
249	5.517453						
270	5.598422						
320	5.768321						
410	6.016157						
430	6.063785						
480	6.173786						
890	6.791221						
930	6.835185						
1230	7.114769						
2300	7.740664						

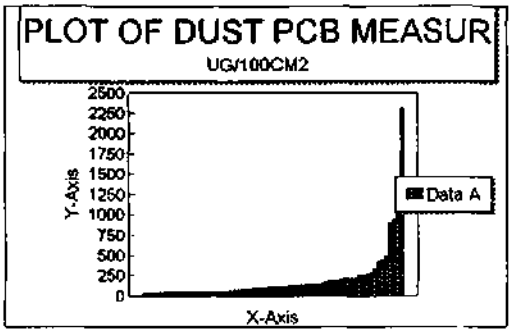

TABLE 4 1

VALUES USED FOR DAILY INTAKE CALCULATIONS

Aerovox Facility, New Bedford Harbor, MA

Exposure Scenario for the Tank Room Operator

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Cd	concentration of PCBs in dust (f)	ug/100cm2	271	see table 1	271	See Table 1	Cancer
+	FTSS	fraction transferred from surface to skin	fraction - unitless	0 01	a	0 01	a	RME 8 5E-04
Dermal	SA	adult surface area	cm2	2000	b	1000	professional judgement	
	FTSM	fraction transferred from skin to mouth	fraction - unitless	0 015	a	0.015	a	CT 2 3E-06
	CF	contact frequency	events/dy	8	prof judge	4	prof judge	
	ABSo	oral absorption fraction	fraction - unitless	1	c	1	b	Noncancer
	F	exposure frequency	dys/yr	250	site-specific	250	site-specific	RME 1 9E-04
	D	exposure duration	yrs	25	c	25	c	
	CPFo	Oral Cancer Potency Factor	(mg/kg-dy)-1	2	d	1	d	CT 5 4E-06
	BW	adult body weight	kg	70	c	70	c	
	AT	averaging time (carcinogen)	days	25550	c	25550	c	
		(noncarcinogen)		10950	c	10950	c	
	RfDo	oral reference dose	mg/kg-dy	2E-05	IRIS, 97	2E-05	IRIS, 1997	
	ABSd	dermal absorption from dust	fraction - unitless	0.14	e	0 14	e	
	cf	conversion factor	mg/ug	0.001	-	0.001	-	

a - USEPA. (1996). Oral and Dermal Risk Assessment Final, Cressona, Aluminum Plant, Cressona, PA. From Debra Forman, PhD toxicologist Industrial Domain Section, Region 3, Philadephia, PA

b - PTI Environmental Services. (1993). Gastrointestinal Absorption of Selected Chemicals, Review of Evidence for Deriving Relative Absorption Factors. EPA Contract # 68-WO-0032

c - USEPA (1993) *Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure. Draft November*

d - USEPA (1996). PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures. National Center for Environmental Assessment, Office of Research and Development, Washington, DC *EPA/600/P-96-001F*

e - Wester, R., Maibach, H., Sedik, L., and J. Melendres (1993). Percutaneous Absorption of PCBs from Soil: In Vivo Rhesus Monkey, in Vitro Human Skin, and binding to Powdered Human Straum Corneum Journal of Toxicology and Env. Health, 39: 375-382

f- represents 90%x UCL of Hi exposure areas + 10% x UCL of low exp. areas

Intake Factor (mg/kg-dy) = [cf x FTSS x SA x FTSM x CF x ABSo x F x D/BW x AT] + [cf x FTSS x SA x (1-FTSM) x CF x ABSd x Fx D/BW xAT]

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CALCULATION OF 95 UCL

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TANK ROOM OPERATOR

Most frequented areas: (Tank room 1, impregnation rack room, final test area and and tank room 2)

Concentration*	LN	mean	sd	sd2	n	Hstat	UCL
64	4.158883	4.891547	0.901676	0.813	30	2.322	294.7
55	4.007333						
63	4.143135						
39	3.663562						
202	5.308268						
270	5.598422						
203	5.313206						
480	6.173786						
112	4.718499						
249	5.517453						
320	5.768321						
890	6.791221						
247	5.509388						
180	5.192957						
159	5.068904						
154	5.036953						
190	5.247024						
2300	7.740664						
76	4.330733						
55	4.007333						
48	3.871201						
63	4.143135						
74	4.304065						
88	4.477337						
117	4.762174						
144	4.969813						
67	4.204693						
159	5.068904						
115	4.744932						
54	3.988984						
45	3.806662						

*Includes all samples collected from surfaces except those samples collected from ceilings or beams. No samples reported ND.

Aerovox Facility, New Bedford Harbor, MA

Exposure Scenario for the Pump Room Operator

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Chronic Daily Intake Factor (mg/kg-dy)
Ingestion	Cd	concentration of PCBs in dust (f)	ug/100cm2	596.60	see table 1	599	See Table 1	Cancer
+	FTSS	fraction transferred from surface to skin	fraction - unitless	0.01	a	0.001	a	RME 8.5E-05
Dermal	SA	adult surface area	cm2	2000.00	b	1000	professional judgement	
	FTSM	fraction transferred from skin to mouth	fraction - unitless	0.015	a	0.030	a	CT 2.3E-06
	CF	contact frequency	events/dy	8	prof judge	4	prof judge	
	ABSo	oral absorption fraction	fraction - unitless	1	c	1	b	Noncancer
	F	exposure frequency	dys/yr	250	site-specific	250	site-specific	
	D	exposure duration	yrs	25	c	25	c	RME 1.9E-04
	CPFo	Oral Cancer Potency Factor	(mg/kg-dy)-1	2	d	1	d	
	BW	adult body weight	kg	70	c	70	c	CT 5.3E-06
	AT	averaging time (cancer)	days	25550	c	25550	c	
		(noncancer)		10950	c	10950	c	
	RfDo	oral reference dose	mg/kg-dy	2E-05	IRIS, 97	2E-05	IRIS, 1997	
	ABSd	dermal absorption from dust	fraction - unitless	0.14	e	0.14	e	
	cf	conversion factor	mg/ug	1.0E-03	-	1.0E-03	-	

a - USEPA, (1996) Oral and Dermal Risk Assessment Final, Cressona, Aluminum Plant, Cressona, PA, From Debra Forman, PhD toxicologist Industrial Domain Section, Region 3, Philadephia, PA

b - PTI Environmental Services (1993) Gastrointestinal Absorption of Selected Chamicals, *Review of Evidence for Deriving Relative Absorption Factors* EPA Contract # 68-WO-0032

c - USEPA (1993) Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure Draft, November

d - USEPA (1996) PCBs Cancer Dose-Response Assessment and Application to Environmental Mixtures, National Center for Environmental Assessment, Office of Research and Development, Washington DC EPA/600/P-96-001F.

e - Wester, R., Maibach, H., Sedik, L., and J. Melendres (1993) Percutaneous Absorption of PCBs from Soil In Vivo Rhesus Monkey, in Vitro Human Skin, and bindking to Powdered Human Straum Corneum Journal of Toxicology and Env. Health, 39 375-382

f represents 90%x UCL of Hi exposure areas + 10% x UCL of low exp areas

Intake Factor (mg/kg-dy) = [cf x FTSS x SA x FTSM x CF x ABSo x F x D/BW x AT] + [cf x FTSS x SA x (1-FTSM) x CF x ABSd x Fx D/BW xAT]

DRAFT

Calculation of 95%UCL

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Pump Room Operator

Pump Room (Most Frequented Areas)

Conc (ug/100cm2)*	LN	mean	SD	SD2	N	Hstat	UCL
115	4.744932	5.484244	0.832086	0.692	12	2.62	656.7
168	5.123964						
410	6.016157						
241	5.484797						
430	6.063785						
112	4.718499						
131	4.875197						
930	6.835185						
1230	7.114769						
193	5.26269						
202	5.308268						
71	4.26268						

*Includes all samples collected from surfaces except those samples collected from ceilings or beams. No samples reported NDs.

Cafeteria, Locker room, Hall (Less frequented areas)

Conc (ug/100cm2)*	LN	mean	SD	SD2	N	Hstat	UCL
18	2.890372	3.845847	0.534751	0.2859	13	2.155	75.3
39	3.663562						
62	4.127134						
31	3.433987						
30	3.401197						
21	3.044522						
63	4.143135						
42	3.73767						
47	3.850148						
84	4.430817						
67	4.204693						
124	4.820282						
70	4.248495						

*Includes all samples collected from surfaces except those samples collected from ceilings or beams. No samples reported NDs.

UCLpump room operator = 90% x 95UCL for most frequented areas + 10% x 95%UCL for less frequented areas.

=(656.7)(0.9) + (75.3)(0.1)

= 591.0+7.5=598.6

CALCULATION OF NONCANCER HAZARDS
INGESTION AND DERMAL EXPOSURE
AEROVOX FACILITY, NEW BEDFORD, MA

Exp Pt. Conc. RME ug/cm2	Exp Pt. Conc. CT ug/cm2	CDI RME (mg/kg-dy)	CDI CT (mg/kg-dy)	RfD mg/kg-dy	Hazard Index RME	Hazard Index CT
Tank Room Operator						
2.71	2.71	1.9E-04	5.4E-06	2E-05	25.7	0.7
Carpenter						
2.05	2.05	3.8E-04	1.5E-05	2E-05	39.0	1.5
Pump Room Operator						
5.986	5.986	3.8E-04	1.5E-05	2E-05	113.7	4.5

NOTES: Exp. pt conc - exposure pt concentration, equal to 10% x 95UCL of less frequented areas + 90% x 95UCL of more frequented areas.
CDI = chronic daily intake, see table 4.1-4.3
RfD = Reference Dose
RME - reasonable maximum exposure
CT - central tendency exposure

CALCULATION OF CANCER RISKS
INGESTION AND DERMAL EXPOSURES
AEROVOX FACILITY, NEW BEDFORD, MA

Exp Pt. Conc. RME ug/cm2	Exp Pt. Conc. CT ug/cm2	CDI RME (mg/kg-dy)	CDI CT (mg/kg-dy)	CPF (mg/kg-dy)-1	Cancer Risk RME	Cancer Risk CT
Tank Room Operator						
2.71	2.71	8.5E-05	2.3E-06	2	5E-04	1E-05
Carpenter						
2.05	2.05	1.6E-04	6.2E-06	2	7E-04	3E-05
Pump Room Operator						
5.986	5.986	8.5E-05	2.3E-06	2	1E-03	3E-05

NOTES: Exp. pt conc - exposure pt concentration, equal to 10% x 95UCL of less frequented areas + 90% x 95UCL of more frequented areas.
CDI = chronic daily intake, see table 4.1-4.3
CPF = cancer slope factor, from IRIS 1/98
RME - reasonable maximum exposure
CT - central tendency exposure

DRAFT

RISK/HAZARD CALCULATIONS
Oral + Dermal exposures (ug/100cm2)

Reference Risk/Hazard Level	Tank Room Operator	Carpenter	Pump Room Operator
1x10-6	0.5	0.3	0.6
1x10-5	5	3	6
1x10-4	50	30	60
HQ = 1	11	5	5

R2 - 10^{-4} ug/100cm²

C/U # 10^{-6} .3 → 260 maintenance

for HI = 1 c/u = 3.6

CHEMRISK

7.5
maintenance

R3 (Westinghouse)

0.7
maintenance

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service

National Institute for Occupational
Safety and Health
Robert A. Taft Laboratories
4676 Columbia Parkway
Cincinnati OH 45226-1998

January 12, 1998

Ms. Ann-Marie Burke
U.S. EPA, Region 1
JFK Federal Bldg., HBS
Boston, MA 02203

Dear Ms. Burke:

This letter summarizes some of the points that we made during our December 17th teleconference with you and others from the U.S. EPA.

Status of ongoing NIOSH studies. NIOSH has three ongoing studies of PCB-exposed workers: 1) a mortality update (of the Brown 1987 study) and a registry-based cancer incidence study of the New York and Massachusetts cohorts; 2) a mortality update of the 1992 Sinks study of the Indiana cohort; and 3) a breast cancer incidence study among women in the New York, Massachusetts, and Indiana cohorts. Results for these studies are anticipated in the next 2-3 years.

Relationship between PCB exposure and specific health effects. The human evidence for certain cancers is suggestive; for other cancers, the evidence is equivocal. For a summary of these studies and studies that examine other health effects, we refer you to the ATDSR document, "Toxicological Profile for Polychlorinated Biphenyls", draft report published in February of 1996. We understood from one of your colleagues participating in the teleconference that the final report has been published, but we have not yet seen it.

How well serum PCB levels reflect exposure. Because PCBs are taken up through multiple exposure routes, including dermal absorption, inhalation, and ingestion, and because no data exist regarding the relative contributions of these mechanisms for PCB uptake, biologic measures are superior to exposure estimates that assume relative contributions from various routes of exposure. Studies of human exposures to PCBs generally evaluate biologic measures rather than environmental measures. In the case of PCBs, excellent analytical methods exist for serum and adipose tissue quantitation down to the part per trillion level. We list below several PCB human exposure assessment studies that have evaluated blood and/or adipose tissue levels:

ATSDR Toxicological Profile for PCBs, Draft for Public Comment, August 1995.
IARC Monograph on Polychlorinated Biphenyls, Volume 18
WHO Environmental Health Criteria Document for PCBs, EHC 140, 1993
Kreiss K, Env Health Perspect 60:193, 1985
Lees P et al, AIHAJ 48:257, 1987
Luotamo M, et al, Scand J Work Env Health, 14:60, 1988
Luotamo M et al, Env Oes 54:121, 1991
Luotamo M et al, Chemosphere v27, no.1-3, p171-177, 1993

Maroni M et al, BJIM 38:49, 1981
Maroni M et al, BJIM 38:55, 1981
Phillips D, Smith et al, Arch Env Health 44:351, 1989
Skerfving S, et al, Clin Chem 40/7, 1409-1415, 1994
Swanson M et al, Reg Tox & Pharmcol 21:136-150, 1995
Wolff M, Thornton J et al, Tox Appl Pharmacol 62:294, 1982
Wolff M, Env Health Perspect 60:133, 1985
Woodruff T et al, Env Res 65, 132-144, 1994

If we can be of further help, please don't hesitate to call us (Dr. Whelan at 513-841-4437 and Dr. Waters at 513-841-4458).

Sincerely yours,

Elizabeth A. Whelan, Ph.D.
Chief, Epidemiology I Section

Martha A. Waters

Martha Waters, Ph.D.
Chief
Exposure Assessment Methods Activity
Industrywide Studies Branch
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Consultants in Environmental Science, Policy & Management

MEMORANDUM

TO: Marianne Milette

FROM: Katinka van der Jagt

DATE: November 20, 1997

SUBJECT: Follow Up EPA's Meeting With Aerovox On 11/12

During a November 12, 1997, meeting between Aerovox and EPA Region 1officials, Aerovox was asked by Marianne Milette (EPA) to address five questions relating to potential exposure of Aerovox employees to polychlorinated biphenyls (PCBs). This memorandum responds to the five questions.

Q1) What type of worker would be the most potentially exposed to PCBs in the current Aerovox environment?

A1) Tank Room Operator, Pump Room Operator, Carpenter, and Mechanic, would be the most potentially exposed. The reason for exposure for the Tank Room Operator and Pump Room Operator is that they work in an area where the highest levels of PCB contamination were found. The reason for exposure for the Carpenter and the Mechanic is the type of work they perform. Their work potentially causes re-suspension of PCB contamination and during the performance of their job, surfaces are contacted more frequently. They may at times contact surfaces as ceilings, ceiling beams, and floors.

Q2) What group of individuals make up this category?

A2)

Job Title	Sex	Age Group in years	Employment Period in years	Number of Employees	Shifts per day
Tank Room Operator	Males	35 - 55	10 - 15	4 per shift, 7 days per week	3
Pump Room Operator	Males	35 - 55	10 - 15	1 per shift, 7 days per week	3
Mechanic	Males	30 - 35 (one employee = 25)	10 - 15	4 employees, 5 days per week	1
Carpenter	Males	45 - 50	15 - 20	2-1 per day, 5 days per week	1

Q3) Describe the clothing they wear on a typical workday.

A3)

Tank Room Operator:	safety shoes, cotton gloves, uniform, safety glasses
Pump Room Operator:	safety shoes, cotton gloves, uniform, safety glasses
Mechanic:	safety shoes, cotton gloves (occasional), uniform, safety glasses
Carpenter:	safety shoes, uniform, safety glasses

The uniforms are put on, worn, and taken off at the plant and laundered. Cotton gloves are usually changed or replaced 1-3 times a day.

Q4) How much time of this worker's day is spent in each room of the facility.

A4)

Tank Room Operator:	7 hours in the tank room, 30 minutes in the cafeteria, 30 minutes on miscellaneous activities (going for a walk, running errands etc.)
Pump Room Operator:	7 hours in the pump room, 30 minutes in the cafeteria, 30 minutes on miscellaneous activities
Mechanic:	1 mechanic spends 4 hours in the pump room, while the other mechanics perform duties throughout the building, all of them spend 3 hours in the machine-repair shop, 30 minutes on miscellaneous activities
Carpenter:	3.5 hours in the mechanic shop, 3.5 hours performing duties throughout the building, 30 minutes in the cafeteria, 30 minutes on miscellaneous activities

Q5) Describe their activities in each room.

A5) See the attached activity description in Table.

Job Title and Location	Activity	Hours/ Day	Detailed Breakdown
Tank Room Operator tank room	Capacitors are received in baskets that have been placed on carts for transportation. By use of a chain fall or air operated hoist the baskets are lifted and placed inside of the impregnation tank. Cotton gloves are worn. During the impregnation cycle valves are normally opened and closed at the rate of 2 times per hour (no gloves are worn). At the end of impregnation cycle the impregnated capacitors are removed and placed onto trays in the same manner as loading (cotton gloves). The excess oil is removed from the inside of the tank with a squeegee.	2 1 4	Handling materials in baskets (clean capacitors to be impregnated). Paperwork. Working around tank: loading, unloading, open and close valves.
cafeteria	Eating lunch.	0.5	-
miscellaneous	Going for a walk, running errands etc.	0.5	-
Pump Room Operator pump room	Pump room operator stays in the pump room area and services the vacuum pumps as required. Opening valves starting and stopping pumps as per tank requirements. There are 35 vacuum pumps. The operator also lubricates the pumps and maintains the pumps as required.	7	Some paper work at desk, managing pumps, setting valves.
cafeteria	Eating lunch.	0.5	-
miscellaneous	Going for a walk, running errands etc.	0.5	-
Mechanic pump room	Normal equipment repairs, installation, pump repair, works throughout plant. Preventive maintenance on all equipment.	4	Pump room maintenance by 1 of the mechanics, the remaining 3 work in other areas of the plant, rotating schedule
shop	All other miscellaneous shop functions, reading materials, ordering materials, delivering to sites, work in shop.	3.0	-
cafeteria	Eating lunch.	0.5	-
miscellaneous	Going for a walk, running errands etc..	0.5	-
Carpenter throughout building	Normal carpentry duties and equipment, would occasionally repair floors, walls, ceilings, etc.	3.5	25% of time is spent on destruction, 75% of time is spent on construction with new materials.
shop	All other miscellaneous shop functions, reading materials, ordering materials, delivering to sites, work in shop.	3.5	-
cafeteria	Eating lunch.	0.5	-
miscellaneous	Going for a walk, running errands etc.	0.5	-